



# California Regional Water Quality Control Board

## San Diego Region

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July 6, 2003

**FILE NO.: 06-0024.02**

Mr. Richard Chase  
c/o Gregory Canyon Ltd.  
991-C-404 Lomas Santa Fe Drive  
Solana Beach, California 92075

Dear Mr. Chase:

**RE: JOINT TECHNICAL DOCUMENT FOR GREGORY CANYON LANDFILL  
DATED JUNE 2003**

The purpose of this letter is to acknowledge receipt of the Joint Technical Document (JTD) by the California Regional Water Quality Control Board, San Diego Region ("RWQCB") on June 4, 2003. The current JTD supersedes the previous document submitted to the RWQCB on July 12, 2001.

Based upon our review of the current JTD, the RWQCB has determined the current JTD is incomplete. We have the following comments on the current JTD:

### ***General Comments***

#### ***1. Scope of RWQCB Comments on the JTD.***

Due to the 30-day time constraints allowed for our completeness review, the volume, the complexity of the technical information, and the limited availability of technical staff the RWQCB was unable to complete a review all the information listed on the Water Board JTD Index. As a result, there may be additional concerns related to the material presented in the JTD. The RWQCB will review the remaining portions of the JTD. If we identify any additional concerns the RWQCB will provide you additional written comments by August 8, 2003.

### ***California Environmental Protection Agency***

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our Web-site at <http://www.swrcb.ca.gov>.*

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2. Jurisdiction on Wetlands Issues.

The Regional Board received a cc: of a letter sent to Gregory Canyon Ltd. (the "discharger") by the U.S. Army Corps of Engineers. The letter dated January 17, 2003 requires you to reapply for permitting under Section 404 of the Clean Water Act (CWA). You should be aware that the waste discharge requirements must rely upon findings that the applicable certification and permitting, pursuant Sections 401 and 404 of the CWA, have been completed for the proposed project. The RWQCB requests the discharger send a copy of any written determination, by the Army Corps of Engineers, of satisfactory completion of the 404 CWA permitting process to the California Regional Water Quality Control Board – San Diego Region (Attention: Land Discharge Unit Supervisor).

3. Compliance with Subtitle D.

The RWQCB must be able to assess if the proposed design and operations will comply with existing federal requirements found in Title 40, Code of Federal Regulations (CFR) Part 258 (40 CFR Part 258 or "Subtitle D"). Within the Specific Comments below, we have identified a number of areas where additional information is required for the RWQCB to evaluate compliance with existing federal requirements.

Although not specifically listed in the State Water Board Index, the facility must also meet the federal requirements/criteria for control of explosive gases required by 40 CFR, § 258.23.

4. SWRCB Index- Discrepancies in JTD page/section references.

A number of page citations listed in the Water Board JTD Index appear to be incorrect. California Code of Regulations, 27 CCR, § 21585(b) requires that "... *dischargers list all the JTD pages (by page number or ranges thereof) addressing the topic.*" The accuracy of the Water Board JTD Index is essential for the RWQCB is to review the JTD for completeness within 30-days. The RWQCB staff could not determine the location of the cited information in the JTD from the following entries in the Water Board JTD index:

SWRCB Requirement	SWRCB Citation	JTD Page Range(s) fulfilling the SWRCB Citation
§ 20360 Subsurface Barriers	§ 20360(b) – cutoff walls	If proposed: not applicable to GCLF. <i>RWQCB NOTE: on page C.2-16 the JTD proposes to construct a cutoff wall. Please reconcile the JTD Index and the text in the revised version of the JTD.</i>
§ 20405 Monitoring Points of Compliance	§ 20405(a – b)	Appendix E pgs. 17 & 18. <i>See footnote No. 1.</i>

Corrective action financial assurance	§ 20380(b)	F.1-5 and reference to Appendix P <i>RWQCB</i> <i>NOTE: page F.1-5 only discusses a Trust Agreement for closure and post-closure maintenance costs. The text does not identify acceptable FAs for corrective actions.</i>
Monitoring Points and Point of Compliance	§ 20405(a – b)	Appendix E, pgs. 17 and 18. <i>See footnote No. 1 to this table.</i>
Groundwater monitoring (general)	§ 20415(b) – (b)(4)(D)	Appendix E, page 17 thru 19, Table 2. <i>See footnote No. 1.</i>
Surface Water monitoring (general)	§ 20415(c) – (c)(2)(D)	Appendix E, pgs 18 and 20 <i>See footnote No. 1 to this table.</i>
Unsaturated zone monitoring	§ 20415(d) – (d)(4)	Reference to Appendix E. <i>See footnote No. 1 to this table.</i>
Logging of Borings	§ 20415(e)(2) – (e)(2)(C)	Reference to Appendices B and E. <i>See footnote No. 1 to this table.</i>
Monitoring sample QA/QC	§ 20415(e)(4) – (e)(4)(D)	Reference to Appendix E. <i>See footnote No. 1 to this table.</i>
Sample and analytical methods (perf. std. for)	§ 20415(e)(5)	Reference to Appendices E and A (Section 5). <i>See footnote No. 1 to this table.</i>
Monitoring data procurement, analysis, and submittal	§ 20415(e)(6) - (e)(15)	Reference to Appendix E. <i>See footnote No. 1 to this table.</i>
Detection Monitoring Program	§ 20240	Reference to Appendix E, pgs. 20 thru 21. <i>See footnote No. 1 to this table.</i>

1 = *Footnote: cited reference to Appendix(es) (e.g., Appendix E, etc.) are unclear or may be inaccurate. It is unclear if additional information was to be provided in the JTD, since the cited information appears to be unrelated to the topics identified by footnote above.*

Until these apparent discrepancies (cited above) are corrected, it is difficult for the RWQCB to assess the completeness of the information as referenced in the JTD Index. The JTD Index must be corrected as necessary in the revised JTD.

### ***Specific Comments***

The following are our Specific Comments on the JTD referenced above:

1. **27 CCR, § 20323 – Construction Quality and Assurance (CQA) Plan**

**page C.4-1 to C.4-9**

The final CQA report shall contain all the information required by 27 CCR, § 20324, including but not limited to: professional qualifications, reports, documentation, laboratory testing methods, field testing requirements, test fill pad requirements, earthen materials requirements, and geosynthetic membrane requirements. The final CQA report shall be signed and stamped by a registered professional(s) identified in 27 CCR, § 20324(b) and required by the California Business and Professions Code

2. **27 CCR, § 20324 – Construction Quality Assurance (CQA) Requirements**

**pages C.4-1 to C.4-9**

page C.4-4, C.4.4.1 Pre-Construction Activities

The pre-construction inspection activities should also include plans to observe the handling and storage of liner materials (especially the geosynthetic clay liner - GCL) at the site.

page C.4-4, C.4.4.2 Testing Program: Earthen Fill Materials

The following table identifies the proposed testing/frequency proposed in the JTD that do not appear to be consistent with the required minimum testing/frequency in 27 CCR, § 20320 and § 20324.

Minimum test/frequency	Proposed in JTD	Minimum Required - 27 CCR
Compaction curve data – ASTM 1557-91	1 per 10,000 yd <sup>3</sup> or per change in material type	27 CCR, § 20324(2)(B): 1 per week and/or every 5,000 yd <sup>3</sup> of material placed
Test fill pad requirements: ASTM D 3385-94	Not indicated/ proposed in JTD Section C.4.	Required per 27 CCR, § 20320(c) [Determining Hydraulic conductivity] and 27 CCR, § 20324(h) [Test fill pad requirements].
Field density tests	Maximum density/ optimum moisture 1 per 5,000 yd <sup>3</sup> and compaction test (nuclear gauge or sand cone) at 1 per 1,000 yd <sup>3</sup> of material placed.  In-place density and	27 CCR, § 20324(h)(2)(A): Four (4) field density tests per 1,000 yd <sup>3</sup> of material placed.

	moisture content (sand cone): ASTM 1556 at 1 per 2,500 yd <sup>3</sup> or 20 percent of total in-place tests (whichever is greater).	
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If our understanding of the proposed testing protocol is correct, the JTD must be revised to be consistent with the minimum requirements of 27 CCR. Alternatively, the revised JTD must include requisite demonstrations, per 27 CCR, § 20080(b) and § 20080(c), for the RWQCB to consider your proposed alternative to the construction or prescriptive standards.

page C.4-6, C.4.4.2 Testing Program: Geosynthetic Materials

The performance requirements for the geosynthetic membrane(s) used to construct the liner system shall include, but not be limited to, the requirements of 27 CCR, § 20324(i)(1)(A) and § 20324(i)(1)(B).

The minimum CQA criteria for geosynthetic membranes shall include, but not be limited to, all the elements for pre-construction activities, construction activities, and post-construction activities as described in 27 CCR, § 20324(i)(2). The revised JTD must generally describe how the required criteria will be met and identify the entity that will be responsible for ensuring the handling and installation of geosynthetic materials complies with the required criteria. The text should be revised to include a commitment that the selection and installation of geosynthetic membrane(s) shall meet or exceed the minimum performance standards and CQA criteria required in 27 CCR, § 20324(i).

page C.4-6, C.4.4.2 Testing Program: Documentation

Daily Summary Reports: The daily record keeping (summary reports) shall meet or exceed all the information and cross-referencing requirements of 27 CCR, § 20324(d)(1)(A).

Acceptance Reports: These reports shall meet or exceed the requirements of § 20324(d)(1)(B).

Final CQA Documentation: The final CQA report shall meet or exceed the requirements of § 20324(d)(1)(C).

The text of the JTD should be revised to indicate a commitment that the CQA documentation will meet or exceed the minimum requirements of 27 CCR, § 20324(d).

Document Control and Storage. The JTD must be revised to indicate that documentation originals shall be maintained "throughout the post-closure maintenance period."

3. **27 CCR, § 20240 – Classification and Siting Criteria**

**Paragraph 3; page C.1-1, C.1.1 REGULATORY CRITERIA**

The text of the JTD states: "*The proposed GCL project was designed to create the required five feet of separation between underlying groundwater and the landfill. The bottom subgrade will be a minimum of five feet above the highest anticipated groundwater level.*" The Master Excavation Plan (JTD Figure 12) indicates an area (arrow points to the elevation contour at 650 ft) labeled as: "*Outline of area where bottom grade of proposed project Excavation is below the highest anticipated groundwater level (piezometric surface).*" The information depicted on the master excavation plan appears to conflict with the information provided in the text of the JTD. Please resolve this apparent discrepancy in the revised JTD.

4. **27 CCR, § 20330 – Liners**

**Paragraph 3, page C.1-2: ENGINEERING DESIGN, Alternative liner design.**

This paragraph states: "*Subtitle D and 27 CCR allow an operator to develop and submit for approval, an alternative liner design. Although it is not anticipated at this time, GCL may develop an alternative liner design for the GCLF in the future....*"

The RWQCB previously provided our response to this assertion (see RWQCB letter dated February 9, 2001, page 6):

*"Our evaluation of the landfill design must be based upon a thorough knowledge of all the final design elements for the facility. Re-evaluating an alternative liner design, after the issuance of waste discharge requirements, will require the Regional Board to re-consider the viability of the entire project."*

5. **27 CCR, § 20330 – Liners**

**Paragraph/bullet item 1, page C.2-6, C.2.4 PROPOSED DISPOSAL SITE DESIGN, Liner System Design.**

The applicable performance standards for containment systems at Class III units are specified in 27 CCR for liners [§ 20330(a)] and for Class III landfills [§ 20310(c)]. Further, the Federal requirements [40 CFR, § 258.40] require the State to consider the proposed design criteria for Municipal Solid Waste Landfill Facilities (MSWLF) in light of the hydrological characteristics of the facility and the surrounding land.

The RWQCB will consider a number of factors in our evaluation of your proposed design for a double composite liner system for the proposed unit, including: a.) sensitivity of the current and probable future beneficial uses of groundwater and surface water resources, b.) the limited capability of most fractured rock aquifers to naturally attenuate waste constituents, c.) the fact that the liner system must serve as the primary method of protecting ground water quality through the entire active life of the proposed unit, and d.) potential adverse impacts upon the ability of the liner system to provide adequate protection of water quality if defects are inadvertently created during construction of the landfill liner system.

**Bottom Liner System Design.** The RWQCB remains concerned about two aspects of the proposed bottom liner design:

- a.) The thickness of the second composite liner (*i.e.*, interval containing the GCL below a 60-mil HDPE). As a result, the separation between the upper geomembrane (60-mil HDPE) and the top of the compacted clay layer (*i.e.*, two-foot low permeability clay layer) may be less than 1-inch thick. The proposed design provides effectively no separation between the two geomembranes in the composite liner systems. Under these conditions, relatively minor error(s) during liner construction could quickly turn portions of this double composite liner into a single, low permeability soil liner.

The RWQCB requests that you develop a design that includes additional thickness of the interval between the two geomembranes to make the double composite liner system more resistant to potential construction defects (*i.e.*, rips and tears). During the operational life of a landfill, the protection of groundwater quality is primarily depends upon integrity of the liner system. The protection of groundwater quality could be significantly reduced if the integrity of the double composite liner system were compromised during construction.

There are at least two alternatives that could increase the thickness of the interval between the two composite liners, including the use some type of drainage layer or a layer of compacted clay that adds significant thickness to the interval of concern. It is understood that a double composite liner design incorporating a secondary drainage

layer could also have drawbacks, so each design involves tradeoffs. Using a secondary drainage layer may add leak detection capability, but it also introduces a potential pathway for migration of gas or leachate. It could also require modeling of the GCL as hydrated (considerably weakened state) when performing slope stability calculations, unless another FML were added to the design.

- b.) Did your design considerations include the possible use of a thicker 80-mil HDPE material as the lower geomembrane barrier within the proposed design for the double composite liner systems (*i.e.*, bottom liner and side-slope liner systems)?

Slope Liner System Design. The thickness of earthen materials used in construction of the liner system should be measured at an orientation that is perpendicular from contact surfaces between materials, rather than at an angle as indicated in the Figures 14 and 15. On the referenced figures, the manner in which thickness of liner components are measured/reported results in less actual vertical thickness for each component.

The revised JTD should include a discussion of your proposed contingency plans for mitigating active groundwater seeps that may be encountered in the canyon during construction (*e.g.*, especially during installation of side-slope liner systems).

The JTD must be revised to include a technical evaluation of how long the proposed liner design is estimated to be effective at containing waste and waste by-products (*e.g.*, leachate and landfill gas). The evaluation must include results from actual field applications, of the same proposed materials, used to construct liner systems at existing municipal solid waste landfills. The JTD should include an explicit statement that the registered engineer for the proposed Gregory Canyon Project certifies that he/she agrees with this assessment provided in the JTD.

6. **27 CCR, § 20340 – Leachate Collection and Removal System (LCRS)**

**Paragraph/bullet item 1, pages C.2-8, C.2.11**

The JTD does not include a proposed method that would be implemented to satisfy the annual testing requirement, pursuant to 27 CCR, § 20340(d), for the performance of the LCRS. The JTD is not clear on how the currently proposed LCRS design would enable the discharger to comply with this requirement. The revised JTD must include a description of the methods that will be used to conduct annual testing of the LCRS to accomplish the demonstration required by 27 CCR.

As indicated in the JTD (see discussion on page C.2-10), 27 CCR, § 20340(e) requires that the standard LCRS extend up the sides as far as possible. The RWQCB may consider proposed engineered alternatives to prescriptive requirements, if the JTD provides acceptable demonstrations as required by 27 CCR, § 20080(b) and § 20080(c). Please clarify the meaning of the term “*geotextile*” as it is used to reference the proposed liner design for side-slopes (at greater than 5:1 slope). Will the proposed design include a “*geonet*” component to it? The revised JTD must provide supporting information regarding the flow capacity and crush resistance of the geotextile used to convey leachate to the LCRS drain lines.

The revised JTD must provide clarification and detail drawing(s) on how the drainage collector box, located at the back of the benches on the slopes, is configured. Drainage layers (geocomposite/geotextile) on both the benches, and the 2:1 side slope sections in between the benches, terminate in the collector box. Does the collector box contain a slotted pipe wrapped with filter fabric (a “burrito” design) and is it filled with sand or another type of granular material? The JTD must provide the RWQCB with enough information regarding the design and anticipated performance of the LCRS/subdrain systems. If these don't work properly (*via* clog, collapse), or don't have adequate flow capability, they may cause slope stability problems within the proposed unit.

Appendix C: Section 3.7 Leachate Generation Analysis. The model configuration described on page 3-14 includes a “... 186-acre landfill.” However, on page B.1.3 the text states “... a 196-acre refuse area footprint disposal [*sic*].” How much of a difference would this discrepancy make in the model predictions for leachate generation as presented in Appendix C and the analysis of potential impairment of water quality included in the JTD?

The discussion in the JTD (page 3-15) cites the peak daily leachate generation estimated at 1,236 ft<sup>3</sup>/day. The computer printouts provided on the CD (attached to Appendix C) appear to contain analyses for years 30 to 60. The revised JTD should provide information for the time period when the model predicts the occurrence of the maximum daily leachate production rate (*i.e.*, add the model simulation from the 16<sup>th</sup> year on the CD).

7. 27 CCR, § 20360(b) – Cut off walls

page C.2-16

Although the JTD Water Board Index indicates that cutoff walls are not applicable, the JTD text indicates the “*perimeter channel will have a cutoff wall.*” The revised JTD must

include specific information on how the “*cutoff wall*” proposed in the text will meet the minimum standards as specified in 27 CCR, § 20360. Also, see General Comment No. 4 above.

8. **27 CCR, § 20370 – Seismic Design**

**Section D and Appendix C**

**SLOPE STABILITY ISSUES**

The text of the JTD should be modified to include the following information:

- a.) Please verify that the peak ground acceleration (PGA) value used in the analyses was derived using an appropriate procedure. Was more than one seismic source used? Was a scaled real time history (or histories) used or was a synthetic time history generated?
- b.) Please verify if the alignment of Section A-A' is adequate/appropriate and incorporates the steepest, highest slope sections.
- c.) Indicate if an infinite slope analyses were performed for the cover system and if the approach of Bray (1998) was applied for the analyses. Bray (1998) states that his method is not appropriate for covers due to uncertainties associated with deriving accelerations for a landfill crest.
- d.) Indicate which material interface is considered weakest and whether friction angles are supported with adequate testing if greater than 12 degrees.
- e.) Verify that smooth HDPE surface (Phi 8 degrees) is used only on side slopes and intended as a designed-in slip surface. The minimum Phi for HDPE on side slopes is typically around 12 degrees. Why is 8 degrees proposed here?
- f.) Verify that figures used in the applied approach (Bray, 1998) to determine shear wave velocity (1,200 ft/sec) are appropriate for refuse of the height in question.
- g.) Verify that test results are available to support use of Phi = 14 degrees for textured HDPE/geotextile interface.
- h.) Is the GCL used on side slopes “*encapsulated*” and was it modeled under assumed completely unsaturated conditions? If this was the case, then is this

realistic considering that bentonite can hydrate up to 50% simply from exposure to air?

- i.) The JTD (Mr. Jadish Mathur) used two PGA values, 0.40g and 0.60g with 1 inch and 9 inch permanent displacements, respectively. Please indicate exactly how these values were derived. Do they reflect a 50% and a 16% chance of occurrence? What is the methodology used in application of these values compared to more typical probabilities for the design basis earthquake (DBE)/upper bound earthquake (UBE) (e.g., 10% chance of exceedence in 50 years, etc.)?
  - j.) Did you perform a site response analysis (SHAKE)?
  - k.) How do the frequencies associated with potential long period motion sources (e.g., San Andreas at a distance of 54 miles) compare with natural period for the landfill at various fill heights? Were distant large magnitude events considered in the stability analyses? Were other large magnitude, distant sources considered also (e.g., San Jacinto, M 7 at 30 miles, Rose Canyon, M 7 at 25 miles)?
  - l.) Present an evaluation of the significance of potential damage to the unit under the worst case conditions at this site where a PGA of 0.60g and Ky of 0.11g produces permanent displacements of approximately 18.5 cm (the currently allowable limit is 15 cm). Please explain how the 9-inches (22.5 cm) of permanent displacement, as noted above, is derived if worst case conditions (0.60g) lead to displacement of 18.5 cm? Did it involve use of a Ky lower than 0.11g?
  - m.) What are MPE/MCE (DBE/UBE) values, 10% in 50 years/10% in 100 years, for the Gregory Canyon site. The design event is for a M 7 at 6 miles located on the Elsinore Fault. The event was estimated to generate 0.38g at 50% probability and 0.58g at 16% probability. How do these values compare with MPE/MCE (DBE/UBE) values?
  - n.) Are the analyses provided in the JTD based upon a revised list of material strengths, revised from previous versions of the JTD? Please indicate where the list of material strength parameters may be found in the JTD.
9. **27 CCR, § 20380(b) – Corrective action financial assurance**
- pages B.5-13 to B.5-22**

At a minimum, the Operational Costs listed on Table 8 need to be augmented to include the following revisions:

- a.) Add estimated costs for annual maintenance of the proposed treatment systems (e.g., reverse osmosis and granular activated carbon treatment).
- b.) Footnote number 6 indicates that "... *surface water releases occurring during active operations would be mitigated with operational revenues.*" The requirements of 27 CCR § 22222 do not make the distinction between releases occurring during active operations and the post-closure period. The purpose of financial assurances is to allocate resources to the agencies to perform corrective actions in the event that the discharger is unable to fund the necessary actions. The revised JTD must include the estimated costs for surface water mitigation during active operations and post-closure maintenance period in the costs for financial assurances listed in Table 8.

Discussion on page F.1-5 and reference to Appendix P. The discussion on page F.1-5 only appears to reference a financial instrument (i.e., a Trust Agreement) for closure and post-closure maintenance costs at the proposed unit. The text does not discuss the financial instrument to be used for demonstration financial assurances for corrective actions. Please note, the financial instrument used to demonstrate financial assurances for corrective actions must name the RWQCB as the beneficiary (per requirements of 27 CCR, CCR § 22222). Also see General Comment No. 4 above.

10. **27 CCR, § 20395 – Constituents of Concern**

**pages B.5-10 to B.5-11**

The following comments address the discussion in this part of the JTD:

Proposed list of alternative monitoring parameters (MPars). The text of the JTD states: "*It is currently proposed that the MPars include metal surrogates (e.g., total dissolved solids, pH, chloride, nitrate as nitrogen, sulfate), calcium, magnesium, sodium, and volatile compounds (by EPA Method 8260).*" Pursuant to State Water Resources Control Board Resolution No. 93-62, the RWQCBs are required to develop monitoring parameters including all the constituents listed in 40 CFR § 258.54(a) [i.e., Appendix I Constituents]. The JTD must be revised to include a justification for such a modification based upon your written evaluation of the factors listed in 40 CFR, § 258.54(a)(1) and § 258.54(a)(2) [also see Specific Comment No. 16, below – Monitoring and Reporting

Program ]. In addition, you should structure the written justification to satisfy the requirements of 27 CCR, § 20380(e) [Allowable Engineered Alternatives].

For compliance with groundwater monitoring requirements of 40 CFR and 27 CCR, the State Water Resources Control Board (SWRCB) staff recommends the RWQCBs require that the assessment of background concentrations for naturally occurring constituents be based upon an intra-well comparison of a minimum of 16 data points. The background data set presented in the JTD and referenced from 27 CCR, § 20415(e)(6) [see discussion in Appendix C: pages 2-14 and 2-15] are only "minimum" requirements. Statistical analyses of such a small data set (only 4 sample points per well) may not be very useful in accurately characterizing the natural variation in background concentrations for naturally occurring constituents. New wells installed at the facility would be required to undergo an accelerated sampling program to acquire an adequate number of background data for leak detection purposes. In order to have an adequate number of background data points available, the RWQCB recommends that the project proponent continue to collect additional data on background concentrations of all the constituents listed in 40 CFR, Part 258, Appendix I.

*Proposed list of Constituents of Concern (COCs).* The text of the JTD states: "*Since the four quarters of COC constituents have been completed, subsequent samples collected will be analyzed for a reduced suite of monitoring parameters (MPars) as deemed appropriate by the RWQCB.*" Constituents that are added to the site-specific COC list are developed from data concerning a detectable release of: a.) waste constituents (from 40 CFR, Pt 258, Appendix II) detected and confirmed in leachate samples collected from the LCRS, or b.) waste constituents into ground water – as indicated by results from groundwater monitoring parameters that were developed pursuant to 40 CFR, § 258.54(a)(1) and § 258.54(a)(2) and specified in waste discharge requirements (WDRs). At a minimum, the RWQCB anticipates that the universe of potential monitoring parameters (MPars) for the proposed Gregory Canyon Landfill will include all constituents included in 40 CFR, Part 258, Appendix I Constituents.

*Proposed definition of "release" from the unit.* The text of the JTD proposes: "*...that individual constituents detected from the COC list whose mean annual concentration in background exceeds one-half of the Federal MCL will be added to the routine Mpar list or other constituents that the RWQCB requires to be included due to local concerns.*" The proposed method for determining a release is not acceptable to the RWQCB. Determination of a release of waste constituents from MSW landfills is generally evaluated using either: a.) results from applicable statistical analyses for naturally occurring constituent concentrations above site-specific background concentrations (to be established for a well/MPar pair) or b.) using detectable concentrations, and verification

thereof by retest, for constituents that do not have background concentrations (e.g., volatile organic constituents and/or semi-volatile organic constituents). **NOTE:** that detectable concentrations are commonly much lower than the applicable State or Federal MCL for individual constituents.

*Proposed Surface Water Monitoring network.* The JTD proposes a monitoring network for surface waters comprised of the following locations of existing surface water monitoring points: GCSW-1 (Canyon background), GCSW-2 (Canyon compliance point), SLRSW-1 (background surface water downstream of Hanson's facility), and SLRSW-2 (surface water downstream of the landfill east of the proposed access road/bridge). Please see Specific Comment No. 15 (below) for our comments on the proposed surface water monitoring locations.

*Other Monitoring Points.* The JTD describes the annual sampling from the LCRS as being "... analyzed for the full suite of COCs." The RWQCB normally requires that annual leachate samples be analyzed for all the constituents listed in 40 CFR, Part 258, Appendix II Constituents.

11. **27 CCR, § 20415 – General Water Quality Monitoring and System Requirements**

All existing and proposed groundwater monitoring wells must be designed and constructed to meet the criteria listed in 27 CCR, § 20415(b)(4).

The JTD should provide your rationale for how the proposed monitoring system will provide adequate coverage of existing or potential zones of high hydraulic conductivity as required for the detection monitoring program as outlined in 27 CCR, § 20415 (b)(1) (B)(5). This information is also essential for supporting your rationale that the proposed groundwater monitoring network will meet the performance standards and comply with requirements in 27 CCR, § 20420, 40 CFR, § 258.51, and 40 CFR, § 258.54.

Also, see further comments on Appendices C (Specific Comment No. 15) and G (Specific Comment No. 16) below.

12. **27 CCR, § 20705 – Standards for Daily and Intermediate Covers**

pages B.4-12 to B.4-15, B.4.4.5.1 DISPOSAL SITE OPERATIONS, Alternative Daily Covers (ADC), AND

Paragraph 2, page C.2-3, C.2.2.3 PROPOSED DISPOSAL SITE DESIGN, Material Availability.

The text references the possible use of alternative daily cover (ADC) at the proposed unit. The RWQCB is required to implement applicable provisions of 27 CCR in waste discharge requirements (see 27 CCR, § 21720). The JTD does not provide the RWQCB with enough information to determine if WDRs will be required for the use of ADC at the proposed unit. If you plan to use ADC as part of the regular waste disposal operation at the proposed unit, then the revised JTD must contain additional specific information on the waste classification, composition, and liquid percolation characteristics of the specific proposed ADC [see § 20705(e) and § 20690(a)(6)].

13. **27 CCR, § 21750(a) – Analysis of Potential Impairment**

**pages B.5-3 to B.5-6: Analysis of Potential Impairment to Groundwater**

The analysis presented in this section (and Appendix C page 2-16) indicates the use of the following scenario: “... *leakage through the liner of about 10 gallons per day per acre (1,850 gallons per day for the entire site).*” The cited leak rate would result in an annual total of 675,250 gallons per year. However, on page B.1.3 the text states “... *a 196-acre refuse area footprint disposal [sic].*” Assuming the analysis presented in pages B.5-3 to B.5-6 includes the entire refuse disposal area the leak rate should be 1,960 gallons per day (or 715,400 gallons per year). It is not clear to the RWQCB if the additional leachate volume of an additional 40,150 gallons per year would significantly change the analysis of potential impairment presented in this section of the JTD. The revised JTD should correct this discrepancy and include a revised analysis of potential impairment as necessary.

The text discusses the use of “*volatile compounds*” as part of a suite of indicator parameters in the analysis of potential impairment. What physico-chemical characteristics (*e.g.*, solubility, Henry’s Law Constant, partitioning coefficient – K<sub>oc</sub> calculated retardation factor, *etc.*) were assigned to the “*volatile compounds*” used by the modeling analysis described in the text? What types of “*volatile compounds*” (*e.g.*, chlorinated solvents, aromatic hydrocarbons – benzene, aliphatic hydrocarbons, fuel additives – MTBE) would those characteristics most accurately represent.

14. **27 CCR, § 21750(e)(6) – Wind**

**pages D.3-2**

An accurate assessment of seasonal wind patterns is important in assessing areas of potential nuisance conditions that may be created near the proposed unit. The JTD cites data from Marine Corps Air Station (MCAS) Miramar (located in the City of San Diego)

as the source of the weather data discussed in the JTD. The data from MCAS Miramar appears to be dated (circa 1995 or eight years ago). Why not use sources of data that are located the San Luis Rey watershed (e.g. Palomar Airport, available NOAA/NWS weather stations)? Alternatively, the revised JTD should provide your rationale for continuing to rely upon those 1995 data from MCAS Miramar as being representative of conditions in the San Luis Rey watershed.

15. **Appendix C: Geologic, Hydrogeologic, and Geotechnical Investigations Report**  
**page 2-4, Surrounding water uses.**

Are the groundwater aquifers (i.e., alluvial and/or fractured rock aquifers) in the Pala Basin functionally equivalent to a "sole source aquifer?" The U.S. EPA ( <http://www.epa.gov/safewater/swp/ssa.html> ) defines a sole source aquifer as :

*"... one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s), which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as "sole source aquifers" (SSA)."*

The text of the revised JTD should include your assessment of the answer to this question and the rationale for your conclusion. This information is necessary for the RWQCB to objectively evaluate factors under 27 CCR, § 21750(h)(5).

**page 2-14, Background Water Quality.**

The JTD references 27 CCR, § 20415(e)(6) as the source of requirements for determination of background water quality. The requirements of 27 CCR are only minimum standards. The State Water Resources Control Board (SWRCB) has provided the RWQCB with technical guidance that a minimum of sixteen (16) background data points are necessary to establish a statistically sound (intra-well) evaluation of background concentrations of naturally occurring (mostly inorganic) constituents. The SWRCB recommends using "intra-well" comparisons as a means to control excess variance, that may be introduced to the system by "inter-well" comparisons, for the purpose of establishing background concentrations of naturally occurring constituents.

An acceptable background data set must be established for each naturally occurring MPar/monitoring well pair located to: a.) accurately assess background water quality at the proposed unit and b.) function as point(s) of compliance for purpose of the detection monitoring program (DMP) – including the ability to detect statistically significant

increases over background levels. If the monitoring system/network includes different aquifers, then it is necessary to establish representative background data sets for each aquifer included in the monitoring program [pursuant to 27 CCR, § 201415(B)]. The background data set is necessary to establish compliance with water quality protection standards in compliance with requirements of 27 CCR and 40 CFR, Part 258. As a result, the existing background monitoring results presented in the JTD are considered to be insufficient to establish background concentrations of naturally occurring constituents for use in a DMP that satisfies both State and Federal requirements.

The revised JTD must include a plan, which can be included in revisions to Appendix G - Monitoring and Reporting Plan, to acquire the requisite number data points in order to adequately determine background water quality.

**page 2-17 to 2-19, Proposed Monitoring and Reporting Program: Groundwater.**

Figure 2-7 does not indicate the proposed locations of wells Lucio #2R and SLRMWD #34R. Please revise this figure in the next version of the JTD.

The proposed background well GMW-3 appears to be located downgradient of the potential subsurface discharge area emanating from Gregory Canyon (and the proposed unit). It appears that subsurface discharges from Gregory Canyon could result in this background well being impacted. This condition would affect the ability of GMW-3 to function as a background well for the alluvial aquifer. In the revised JTD, provide your written rationale for the location of GMW-3 or re-positioned this well to a "more clearly upgradient" location relative to the mouth of Gregory Canyon.

The JTD presents Figure 2-8 as representing the "*zones of influence*" for the network of compliance wells located downgradient of the proposed unit. However, the text of the JTD does not provide your site-specific rationale for defining the "*zones of influence*" as illustrated on Figure 2-8. The RWQCB assumes that each proposed monitoring well will act as individual passive collectors of groundwater flowing beneath Gregory Canyon. It is not clear how the JTD supports the presented conclusions regarding the apparent lateral and vertical extent of "*zones of influence*", under ambient conditions, for the proposed monitoring well network. The revised JTD must include a clear discussion of the site-specific information indicating that the proposed monitoring wells should be as laterally or vertically extensive or interconnected in the manner depicted in Figure 2-8.

**page 2-18 to 2-19, Proposed Monitoring and Reporting Program: Surface Water.**

*Proposed Surface Water Monitoring network.* The JTD proposes a surface water monitoring network comprised of existing surface water monitoring locations as follows: GCSW-1 (canyon background), GCSW-2 (canyon compliance point), SLRSW-1 (background surface water downstream of Hanson's facility), and SLRSW-2 (surface water downstream of the landfill east of the proposed access road/bridge). The RWQCB has the following comments on the proposed surface water-monitoring network:

- a.) SLRSW-1 (background surface water) – this location appears to be aligned with the discharge point of Gregory Canyon. The “*background sample location*” should be located in a position that is clearly upstream from the mouth of Gregory Canyon.
- b.) SLRSW-2 (surface water downstream from the landfill) – This location may be subject to contamination by vehicular traffic transporting wastes across the bridge and upon the access road for the proposed landfill site. Such impacts would seem likely to affect the surface water quality in a down stream direction from the proposed bridge. The RWQCB staff recommends the discharger consider moving this monitoring point to a location upstream from the bridge/access road crossing the San Luis Rey River.

**16. Appendix G: Monitoring and Reporting Plan**

**page 15, 2.6.3 Water Chemistry**

The JTD references 27 CCR, § 20415(e)(6) as the source of requirements for determination of background water quality. The requirements of 27 CCR are minimum standards. See Specific Comment No. 15 above (Background Water Quality) for further discussion of this topic.

**page 18, Monitoring System.**

The text of the JTD states: “... *existing wells within the landfill footprint will be properly abandoned as the landfill is developed while maintaining the groundwater monitoring system throughout the life of the landfill through the post-closure period.*” The text of the JTD should be revised include a recognition of the need to re-establish background data set for new well locations (using the intra-well comparison method) as the existing groundwater monitoring network evolves over time (*i.e.*, as existing wells are

abandoned/closed). Also see Specific Comment No. 15 above (Background Water Quality) for further discussion of this topic.

**page 20, Monitoring Parameters.**

The JTD proposes to use the following constituents as groundwater monitoring parameters (MPars): general chemistry (*i.e.*, chloride, nitrate as nitrogen, pH, sulfate, TDS); metals (*i.e.*, calcium, magnesium, sodium); and organics (volatile organic compounds). The proposed list of monitoring parameters does not include all the constituents listed in Appendix I to 40 CFR, Pt. 258.

If the JTD proposes a list of "alternative monitoring parameters", then the revised JTD must include your written evaluation specifically addressing all the factors required by 40 CFR, § 258.54(a)(1) and § 258.54(a)(2). In addition, you should structure the written justification to satisfy the requirements of 27 CCR, § 20380(e) [Allowable Engineered Alternatives]. Also, see Specific Comment No. 10 regarding our objections to criteria/definitions in the JTD for adding COCs to the list of monitoring parameters for the proposed unit.

**17. Appendix H: Liner Performance Evaluation**

Experiences of other RWQCBs suggest that "Geonets" may fail in slope and embankment applications where clogging of the Geonet by the surrounding materials becomes a problem. Therefore, it seems reasonable that similar problems could develop for a Geonet drainage layer located within a bottom liner of a landfill beneath millions of tons of municipal solid wastes (MSW), such as the setting envisioned for the proposed project at Gregory Canyon. We conclude that the alternative liner, design including a "Geonet leak collection layer", would probably not conduct leachate as effectively as suggested in the analysis presented in the JTD.

How would the comparison change if it were based upon a properly constructed prescriptive LCRS design (*i.e.*, gravel layer), rather than a Geonet based LCRS design? Is it reasonable that a prescriptive design would provide "... *continuous supply of leachate to all defects that intercept the downgradient migration pathway....*", as indicated in the liner performance evaluation presented in the JTD? Also see Specific Comment No. 5 (Bottom Liner Design) above.

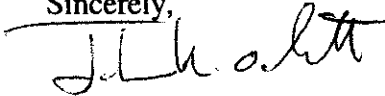
Mr. Richard Chase  
Gregory Canyon Landfill:  
Joint Technical Document,  
Dated June 4, 2003

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July 6, 2003

If you have any questions regarding this letter, please contact Ms. Carol Tamaki at (858) 467 -- 2982 or via e-mail at [tamac@rb9.swrcb.ca.gov](mailto:tamac@rb9.swrcb.ca.gov).

Sincerely,



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Land Discharge Unit

cc: Mr. Richard Boylan, State Water Resources Control Board -- Land Disposal Program

Mr. Michael Wochnick, California Integrated Waste Management Board, 1001 I Street, Sacramento, CA 95814

Ms. Kerry McNeill, Department of Environmental Health, County of San Diego, 9325 Hazard Way, San Diego, CA 92123